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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/997,107	11/29/2001	Desmond R. Lim	MIT8926	3629
55740	7590	09/25/2006	EXAMINER	
GAUTHIER & CONNORS, LLP 225 FRANKLIN STREET BOSTON, MA 02110			FERGUSON, LAWRENCE D	
			ART UNIT	PAPER NUMBER
			1774	

DATE MAILED: 09/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/997,107

Applicant(s)

LIM ET AL.

Examiner

Lawrence D. Ferguson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 3-14 and 29 is/are pending in the application.
- 4a) Of the above claim(s) 15-28 and 30-44 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29 is/are allowed.
- 6) ☒ Claim(s) 1,3,5-14 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

1. This action is in response to the amendment mailed June 5, 2006.

Examiner regrets the untimely reopening of the case and withdraws the previous rejections to further prosecute the claimed invention. Claims 1, 3-14 and 29 are pending, with claims 15-28 and 30-44 withdrawn as a non-elected invention.

### *Claim Rejections – 35 USC § 102(b)*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3 and 5-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Bright et al. (U.S. 5,783,049).

Bright discloses an optical device comprising a stack of two or more pairs of alternating high and low index of refraction layers which have broad bandwidths (column 2, lines 28-36 and column 5, lines 45-50) where one alternating layer comprises indium tin oxide (low index layer comprising high thermal and electrically conductive material) and the other alternating layer comprises doped silicon (high index layer

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comprising degenerately doped material) (column 10, lines 17-56). The reference discloses the multilayer material comprises a metal (column 3, lines 1-5), which is construed as the material having a mirror structure. Bright further discloses the index difference between the two alternating index layers greater than 0.3 (column 2, lines 56-62). In claim 11, the phrase, '...defined by sputtering said alternating layers' introduces a process limitation to the product claim. Additionally, the claim language, '...defined by bonding,' '...defined by utilizing smart cut technique,' and 'defined by utilizing polishing technique' of claims 12-14 are deemed to be product by process claim limitations. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966. In claims 7 and 8, '...ensure that the loss in said optical device will be due to scattering off carriers' and '...exhibit low absorption losses' constitutes a 'capable of' limitation and that such a recitation that a device is 'capable of' performing a function is not a positive limitation, but only requires the ability to so perform. Because Bright has a optical device with equivalent materials as the claimed invention, the plurality of high and low index layers having a relationship of  $E_{s,l} > E_{s,h} > \frac{hc}{\lambda}$ , along with the tunneling junctions between the high and low index layers are inherent features of Bright's optical device. Mere recitation of a newly-discovered function or property, inherently possessed by things in prior art, does not

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cause a claim drawn to those things to distinguish over prior art. The Patent Office can require applicant to prove that subject matter shown to be in prior art does not possess characteristic relied on where it has reason to believe that functional limitation asserted to be critical for establishing novelty in claimed subject matter may be inherent characteristic of prior art.

4. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The closest prior art does not teach or suggest the recited optical device further including wherein the plurality of low index layers are doped diamonds. The prior art does not teach motivation or suggestion for modification to make the invention as instantly claimed.

5. Claim 29 is allowed. The closest prior art does not teach or suggest the recited Fabry-Perot device further including a top mirror that includes alternating layers of said plurality of high index layers and said plurality of low index layers; a cavity structure that includes a bulk of selective material; and a bottom mirror that includes alternating layers of said plurality of high index layers and low index layers; where the high index layers and low index layers have a relationship of  $E_{s,l} > E_{s,h} > \frac{hc}{\lambda}$ . The prior art does not teach motivation or suggestion for modification to make the invention as instantly claimed.

***Response to Arguments***

6. Arguments to rejection made under 35 U.S.C. 103(a) as being unpatentable over Scalora (U.S. 6,262,830) in view of Knapp et al (U.S. 6,077,569) are moot based upon grounds of new rejection.

Arguments to rejection made under 35 U.S.C. 103(a) as being unpatentable over Scalora (U.S. 6,262,830) in view of Knapp et al (U.S. 6,077,569) further in view of Duck et al. (U.S. 5,615,289) are moot based upon grounds of new rejection.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is 571-272-1522. The examiner can normally be reached on Monday through Friday 9:00 AM – 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye, can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should


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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).



L. Ferguson  
Patent Examiner  
AU 1774



RENA DYE  
SUPERVISORY PATENT EXAMINER

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